



June 4<sup>th</sup>, 2018

Honorable Mike Parson  
Governor  
State of Missouri

## MSSC 2017 Report on the State of Missouri's Earthquake Preparedness for Major Earthquakes

Dear Governor Parson:

The Missouri Seismic Safety Commission (MSSC) was established in 1995 with the mission to review Missouri's current preparedness for major earthquakes and to make recommendations to mitigate their impact. The professional volunteers serving on the MSSC have been working in 2017 to fulfill this mission, as documented in this report. Over the past several years the MSSC has been significantly understaffed due to lack of appointments to the commission. When fully staffed, the MSSC consists of 17 members -- 15 appointed professionals from architecture, planning, fire protection, public utilities, electrical engineering, mechanical engineering, structural engineering, soils engineering, geology, seismology, local government, insurance, business, the American Red Cross and emergency management; and two appointed legislative members (one from the Missouri House and one from the Missouri Senate) to work with various levels of government to help Missourians take steps to prepare for and reduce the effects of an earthquake. In 2017 the commission had only eight of the fifteen appointed professional volunteers serving on the commission, as shown in Table 1. Each of the disciplines listed in Table 1 is vital to fulfilling the mission of the MSSC. In 2017, the commission updated a list of viable candidates to fill these positions. The commission looks forward to action by the Governor in 2018 to appoint the full complement of members to the MSSC.

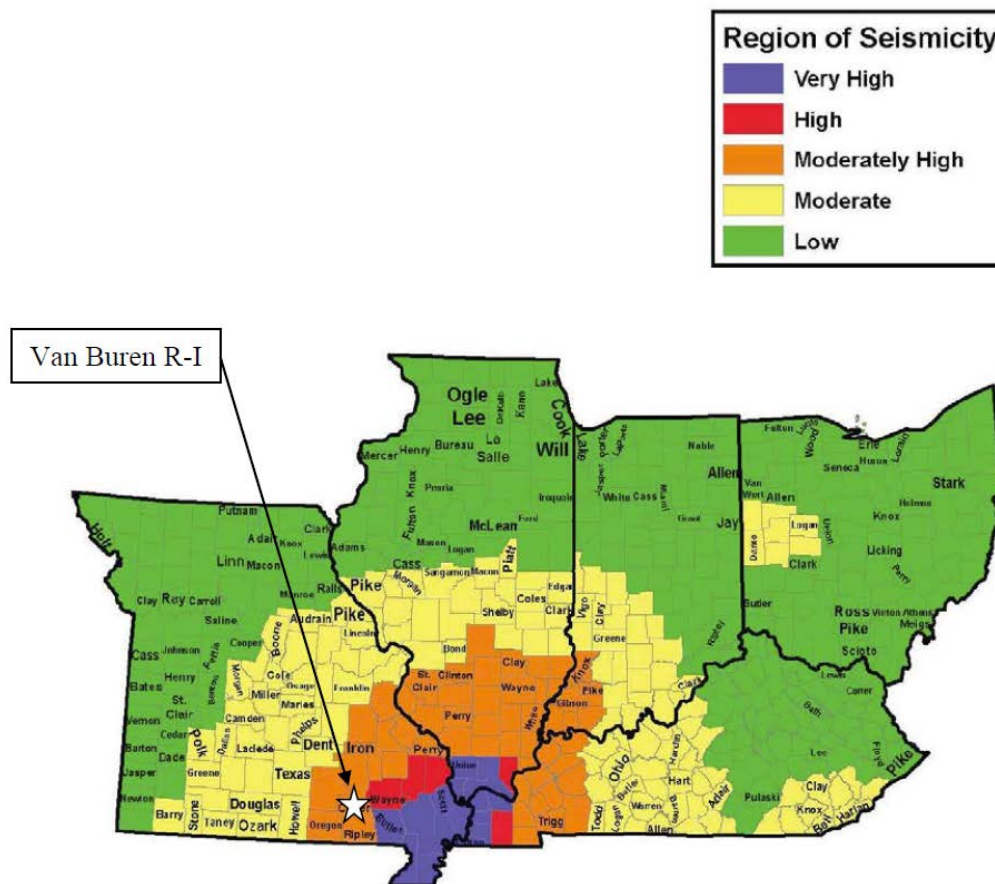
Past earthquakes have caused great damage in the central region of the United States, and there is broad agreement in the scientific community that there is continuing concern for a major earthquake that would put structures and communities in Saint Louis and southeast Missouri at risk for damage from severe ground shaking (Fig. 1). An open file report from the United States Geological Survey has reaffirmed that there is significant reason to plan for a significant seismic event in the New Madrid Seismic Zone.

The earthquake threat to Missouri cannot be ignored. The State of Missouri has taken important steps to prepare for and reduce the effects of a major earthquake as reflected in the Strategic Plan for Earthquake Safety in Missouri, first published by the MSSC in 2007. The Strategic Plan for Earthquakes in Missouri developed tangible, practical recommendations and procedures to prepare Missouri for future earthquakes as well as other hazards, such as tornadoes and strong storms. The plan consists of Five Objectives with specific implementation strategies. The MSSC is currently reviewing and updating the Strategic Plan for Earthquake Safety in Missouri. MSSC commissioners met once each quarter in 2017 to evaluate current progress towards achieving the goals of the Strategic Plan.

The summary presented below highlights the activities of the commission during 2017 in the continued implementation and support of this plan and the current preparedness efforts to mitigate the effects of a major earthquake. Of particular note is the ongoing program of Rapid Visual Screening (RVS) of schools in Missouri. The MSSC oversees the RVS program which recruits and trains volunteer teams to perform preliminary assessments of school buildings in seismically vulnerable regions of the state. Each school district receives a report of the findings as well as supplies for easily implemented, non-structural mitigation actions. The Missouri RVS program was recently presented by one of our commissioners at the Geo-Structures Confluence 2017 Conference in St. Charles on November 2, 2017.

**Table 1: MSSC Commissioners serving in 2017**

<b>Representing</b>	<b>Name</b>	<b>Term End</b>
Electrical Engineering	Dr. Phillip Gould, PE	Term Expires July 1, 2012
Fire Protection	Mr. John Mallott	Term Expires July 1, 2012
Insurance	Vacant	Term Expires July 1, 2012
Local Government	Mr. Joel P. Evans	Term Expires July 1, 2012
Public Utilities	Mr. Daryl Sorrell	Term Expires July 1, 2018
Seismology	Dr. Eric Sandvol	Term Expires July 1, 2012
Soils Engineering	Dr. Raymond Bailey, RG, PE	Term Expires July 1, 2012
Planning	Dr. Greg Hempen, PE, RG	Term Expires July 1, 2010
Soils Engineering	Dr. Brent Rosenblad, PE	Term Expires July 1, 2014
Public Education	Vacant	
Mechanical Engineering	Vacant	
American Red Cross	Vacant	
Geology	Vacant	
Business	Vacant	
Emergency Management	Vacant	
House Appointed Member	Rep. Holly Rehder	
Senate Appointed Member	Sen. Doug Libla	



**Figure 1.** A plot of seismic hazard from the Federal Emergency Management Administration for the New Madrid Seismic Zone highlighting one of the school districts participating in the RVS program. .

2017 Activities in Support of the Strategic Plan for Earthquake Safety in Missouri

**Objective 1: Increase Earthquake Awareness and Education**

Strategy 1.1 - Promote Awareness among the general public.

- Encouraged participation in the annual ShakeOut drill which had over 525,000 participants
- Participated in earthquake awareness month in February
- Maintained and updated the MSSC website
- Distributed decks of earthquake preparedness playing cards to general public

Strategy 1.2 - Promote Awareness among key professionals in critical fields.

- Results from the Rapid Visual Screening program presented at the Geo-Structures Confluence 2017 Conference in St. Charles (11/2/2017)
- Agreed to sponsor and help market the Earthquake Insight Field Trip, which is a three-day field trip for decision makers from industry and government that discusses the history and geology of the New Madrid Seismic Zone and takes participants to significant spots throughout the zone that illustrate seismic activity.
- Chair and Vice Chair met with DPS Director Juden and SEMA Director Rhodes to discuss the important role of the MSSC and the need for additional appointments to the commission.

- Strategy 1.3 - Promote Awareness among K-12 students.
- Helped to conduct the "Rock, Fossil, Quake" event at the St. Louis Science Center with an estimated 3,300 attendees (9/23/2017)
- Participated in Forces of Nature event at Rock Bridge Planetarium with attendance of about 700 (11/11/2017)
- Provided educational resources on MSSC website for teachers

## Objective 2: Reduce Earthquake Hazard Through Mitigation

- Strategy 2.2 - Identify existing essential facilities and schools susceptible to EQ damage.
- Continued sponsorship of program using volunteers to conduct Rapid Visual Screening (RVS) and report on the vulnerability of school facilities in a seismic event.
- Developed a priority list of schools for RVS study in 2017 and 2018
- Final RVS reports for Alton, Risco, Dunklin and Van Buren were sent to school districts
- RVS data collection of two schools districts was completed: Van Buren R-1 and Central R-3.
- Preparation activities completed for the Maries R-2 school district
- Provided schools with supplies for mitigation of non-structural hazards
- Approved plan for commissioners to perform follow-up visits to school districts that participated in the RVS program.

## Objective 4: Improve Recovery

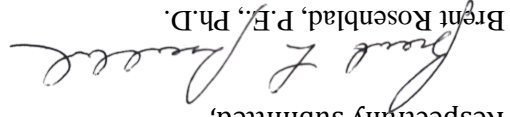
- Strategy 4.3 - Promote funding and training of post-earthquake building inspection. P-154 RVS training of volunteers in Eureka, MO (3/3/2017)

## Objective 5: Assess Earthquake Hazards

- Strategy 5.4 - Support earthquake-hazard studies.
- Commissioners received updates on the Missouri Geologic Survey's Geologic Hazard mapping program. Maps were developed for debris deposal following an earthquake and hazards maps showing liquefaction and landslide potential.

Major earthquakes in the central US are rare, but can affect a large geographical area, challenging the state resources to respond. The lessons learned from past U.S. earthquakes have demonstrated the significant burden placed on surviving families, businesses, utilities and state agencies. Preparation in the short term will yield significant reductions in fatalities, casualties, damaged structures, business failures, and state infrastructure losses from earthquakes. The same actions will also reduce the impact of other natural hazards. The MSSC will endeavor to continue making progress towards achieving the objectives presented in the Strategic Plan for Earthquake Safety during the next twelve months.

Respectfully submitted,

  
Brent Rosenblad, P.E., Ph.D.

2017 Chairman, Missouri Seismic Safety Commission